REMARKS

The Office Action dated March 3, 2004 has been received and carefully noted. The above amendments to the claims and the following remarks are submitted as a full and complete response thereto.

Claims 1 and 5 have been amended. Claim 7 has been added. No new matter has been added, and no new issues are raised which require further consideration and/or search. Claims 1-7 are submitted for consideration.

Claims 5 and 6 were objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Claim 5 has been amended to overcome the objection. Therefore, Applicant respectfully requests that the objection on claims 5 and 6 be withdrawn.

The Office Action rejected claims 1 and 3 under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 4,942,322 to Raybould et al. The rejection is traversed as being based on a reference that neither teaches nor suggests the novel combination of features clearly recited in independent claim 1. Claim 1, upon which claims 2-4 and 7 depend, recites a permanent magnet rotor which includes a solid cylindrical permanent magnet and a power transmitting member connected to an axial end of the permanent magnet. The permanent magnet rotor also includes a reinforcement sleeve into which said permanent magnet is press fitted.

As will be discussed below, the cited prior art reference of Raybould et al. fails to disclose or suggest the elements of claim 1.

Raybould et al. teaches a permanent magnet rotor assembly for use in rotating electrical machines, such as machines and generators. Col. 4, lines 26-30. The assembly includes a permanent magnet which is contained within a non-magnetic metal sheath or carrier. Shaft members are attached to the metal sheath by welds. Col. 4, lines 43-45. In one embodiment, the sheath is cylindrical and houses a cylindrical magnet. Col. 3, lines 56-59. The shaft members may be connected to the ends of the cylindrical shell by conventional welding processes. Col. 3, lines 59-63. The rotor assembly may be formed by the steps of compacting a metal based magnet powder within the non-magnetic sheath to produce a cold compact and sintering the cold compact at a temperature and for a time sufficient to sinter the metal based magnet powder to a density of at least about 90% of the theoretical density and to bond the magnet powder metallurgically to the sheath. Col. 4, lines 31-39.

Applicant submits that Raybould et al. does not teach or suggest all of the elements recited in claim 1. According to the Office Action, the solid cylindrical permanent magnet recited in claim 1 is taught in Raybould et al. as a permanent magnet, the power transmitting member connected to an axial end of the permanent magnet of claim 1 is taught in Raybould et al. as shaft members, and the reinforcement sleeve fitted on an outer circumferential surface of the permanent magnet of claim 1 is taught in Raybould et al. as metal sheaths. As noted above, Raybould et al. discloses that the shaft

members may be connected to the ends of the cylindrical shell. Raybould et al. does not teach or suggest that the shaft members are connected to the axial end of the permanent magnet as recited in claim 1. Raybould et al. also does not disclose or suggest that the shaft members are power transmitting members as recited in claim 1. Furthermore, claim 1 recites that the permanent magnet is press fitted in the reinforcement sleeve. Therefore, as disclosed on page 8, lines 8-11 of the present application, it is possible to apply compressive stress to the permanent magnet to thereby avoid damage to the permanent magnet by canceling the centrifugal stress acting on the permanent magnet as it rotates at high speed with the compressive stress. Further, as disclosed on page 8, line 11-page 9, line 6 and figure 3 of the present application, an optimal amount of compressive stress applied to the permanent magnet can be easily achieved by suitably selecting the dimensions and/or materials of the sleeve. There is simply no teaching or suggestion in Raybould et al. of press fitting the permanent magnet into the reinforcement sleeve. Additionally, with respect to claim 3, Raybould et al. does not teach that the power transmitting member further comprises a shaft member extending continuously from the permanent magnet and that the reinforcement sleeve overlaps a certain length of the shaft member. Therefore, Applicant submits that the rejection under 102(b) should be withdrawn because Raybould et al. does not teach or suggest all of the elements recited in claims 1 and 3.

Claim 2 is rejected under 35 U.S. C. 103(a) as being unpatentable over Raybould et al. in view of U.S. Patent No. 4,910,816 to Dohogne. The rejection is traversed as

being based on references that neither teach nor suggest the novel combination of features clearly recited in independent claim 1, upon which claim 2 depends. Dohogne teaches a shaft mounted rotor assembly for an electric motor. Dohogne teaches that to ensure that permanent magnets are firmly held in place, a plastic molded cylindrical sleeve encapsulates the exposed peripheral surface of the permanent magnets to compressively hold the magnets in fast position on the rotor core. Col. 4, lines 12-19. Dohogne does not cure the deficiencies outlined above with respect to independent claim 1. Specifically, Dohogne does not teach or suggest power transmitting shaft members that are connected to the axial end of the permanent magnet as recited in claim 1. Additionally, Dohogne does not teach or suggest that the permanent magnet is press fitted in the reinforcement sleeve. Although the molded cylindrical sleeve of Dohogne may have similar effects as the reinforcement sleeve of claim 1, there is no disclosure or suggestion in Dohogne as to press fitting the permanent magnet into the sleeve. Therefore, it is not possible in the rotor assembly of Dohogne to easily adjust the compressive stress applied to the permanent magnet by appropriately selecting the dimensions and/or material of the sleeve as disclosed in the present invention. As such, Applicant submits that the rejection under 35 U.S.C. 103(a) be withdrawn because neither Dohogne nor Raybould et al, whether taken singly or combine teaches or suggests each element of claim 1 and hence dependent claim 2.

Claim 4 is rejected under 35 U.S. C. 103(a) as being unpatentable over Raybould et al. in view of U.S. Patent No. 5,424,632 to Montagu. The rejection is traversed as

being based on references that neither teach nor suggest the novel combination of features clearly recited in independent claim 1, upon which claim 4 depends. Montagu teaches a galvanometer including a cylindrical magnetic rotor mounted for rotary oscillation about a central axis and being polarized into two essentially semi-cylindrical poles on opposite sides of the axis. Col. 2, lines 3-7. In various embodiments of Montagu, the rotor is a freely rotating rotor, the distribution approximates a reciprocal cosine distribution, the distribution is determined by $T = ((KBrLNiD)/\alpha_o)\cos\gamma$, where T is the galvanometer's torque output, Br is the constant residual inductance of the magnetic rotor, K is a non-dimensional constant, L is the magnetic rotor length, N is the number of turns in the coil, I is the current passing through the coil, D is the base diameter at which the conductors are placed, α_o is the half-angle of the winding cavity, and γ is the angular position of the rotor. Col. 3, lines 39-57, Col. 9 and line 18 - Col. 10, line 20. Montagu also discloses a sleeve that holds a magnet in place. Col. 6, lines 31-32. The sleeve may be made of stainless steel or titanium and the sleeve and magnent are held together by a semi-flexible adhesive, such as silicone bonding agent or epoxy. Col. 6, lines 32-34 and Col. 7, line 13.

Montagu does not cure the deficiencies outlined above with respect to independent claim 1. Specifically, Montagu does not teach or suggest that the permanent magnet is press fitted in the reinforcement sleeve. Furthermore, claim 4 of the present application recites in part that a length is selected such that L/D is 0.14 or greater where L is the overlap length and D is an outer diameter of the permanent magnet. As noted above, L in

Montagu is the magnetic rotor length and D is the base diameter at which the conductors are placed. Therefore, Applicant respectfully asserts that the rejection under 35 U.S.C. §103(a) should be withdrawn because neither Montagu nor Raybould et al., whether taken singly or combined, teaches or suggests each feature of claims 1 and 3 and hence, dependent claim 4.

As noted previously, claims 1-7 recite subject matter which is neither disclosed nor suggested in the prior art references cited in the Office Action. It is therefore respectfully requested that all of claims 1-7 be allowed and this application passed to issue.

If for any reason the Examiner determines that the application is not now in condition for allowance, it is respectfully requested that the Examiner contact, by telephone, the applicants undersigned attorney at the indicated telephone number to arrange for an interview to expedite the disposition of this application.

In the event this paper is not being timely filed, the applicants respectfully petition for an appropriate extension of time. Any fees for such an extension together with any additional fees may be charged to Counsel's Deposit Account 50-2222.

Respectfully submitted,

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